

What is claimed is:

1. A vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier.
2. A dimer of the vasoactive peptide of claim 1.
3. The peptide of claim 1 consisting essentially of residues 37 to 58 of amino acid sequence SEQ ID NO: 1.
4. The peptide of claim 1 consisting essentially of amino acid sequence SEQ ID NO: 1.
5. The peptide of claim 1, wherein the peptide includes at least one cysteine residue and is capable of forming a dimer by a disulfide bridge.
6. A conjugate comprising:
  - a) a delivery vehicle having the ability to localize at the site of neoplastic tissue; and
  - b) a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, said peptide being connected to said delivery vehicle.
7. The conjugate of claim 6, wherein the delivery vehicle is a tumor specific monoclonal antibody.

8. The conjugate of claim 7, wherein the monoclonal antibody is selected from the group consisting of a murine antibody, a human antibody, and a chimera of human and murine antibodies.

9. The conjugate of claim 7, wherein the monoclonal antibody is selected from the group consisting of Lym-1, Lym-2, TNT-1, TNT-2, or TV-1.

10. The conjugate of claim 7, further comprising an antineoplastic agent attached to the delivery vehicle.

11. The conjugate of claim 10, wherein said antineoplastic agent is selected from the group consisting of drugs, toxins, and radioisotopes.

12. A fusion protein comprising:

a) a delivery vehicle having the ability to localize at the site of neoplastic tissue, the vehicle having at least one terminal amino acid; and

b) at least one vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, the peptide being joined to at least one terminal amino acid of the delivery vehicle by genetic engineering.

13. The fusion protein of claim 12 further comprising an amino acid linker joining the delivery vehicle and the vasoactive peptide.

14. The fusion protein of claim 12, wherein the at least one vasoactive peptide comprises two tandemly linked vasoactive peptides.

15. The fusion protein of claim 14 further comprising an amino acid spacer between the two tandemly linked vasoactive peptides.

16. The fusion protein of claim 12, wherein the delivery vehicle comprises at least one antigen binding domain of an immunoglobulin.

17. The fusion protein of claim 12, wherein the delivery vehicle comprises a human-mouse chimeric monoclonal antibody.

18. A vector for the expression of fusion protein, comprising:

a) a fusion protein sequence comprising;

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1) a delivery vehicle encoding sequence, said delivery vehicle having the ability to localize at the site of neoplastic tissue, and

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2) a vasoactive peptide encoding sequence, said vasoactive peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, said peptide encoding sequence having substantial homology to SEQ ID NO. 2 and having a reading frame that permits co-expression of at least one segment of said delivery vehicle encoding sequence; and

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b) an expression vector having an insertion site for the fusion protein sequence and being capable of expressing the fusion protein in cells.

19. A cell line capable of expressing the fusion protein, comprising:

a) the expression vector of claim 18; and

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b) eukaryotic cells capable of harboring the expression vector and expressing the fusion protein.

20. A method for the therapy of neoplastic tissue, comprising:

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a) administering to a host having said tissue an effective amount of a conjugate, said conjugate comprising:

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1) a delivery vehicle having the ability to localize at the site of neoplastic tissue; and

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2) a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, said peptide being connected to said delivery vehicle; and

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b) contemporaneously or thereafter administering to said host an antineoplastic therapeutic agent.

21. The method of claim 20, wherein said antineoplastic agent is an immunological agent.

22. The method of claim 20, wherein said antineoplastic agent is selected from the group consisting of chemotherapeutic drugs, toxins, and radionuclides.

23. A method for the therapy of neoplastic tissue, comprising, administering to a host having said tissue an effective amount of a conjugate, said conjugate comprising:

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a) a delivery vehicle having the ability to localize at the site of neoplastic tissue;

10 b) a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, said peptide being connected to said delivery vehicle; and

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c) a tumoricidal agent.

24. A method for the diagnosis of neoplastic tissue, comprising:

5 a) administering to a host having said tissue an effective amount of a conjugate, said conjugate comprising:

10 1) a delivery vehicle having the ability to localize at the site of neoplastic tissue, and

15 2) a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing

vascular permeability when joined to a carrier, said peptide being connected to said delivery vehicle; and

20 b) contemporaneously or thereafter administering to said host a tumor imaging agent.

25. A method for the diagnosis of neoplastic tissue, comprising, administering to a host having said tissue an effective amount of a conjugate, said conjugate comprising:

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a) a delivery vehicle having the ability to localize at the site of neoplastic tissue,

10 b) a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, said peptide being connected to said delivery vehicle; and

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c) a detectable label.

26. A therapeutic kit, comprising:

a) a conjugate, said conjugate comprising:

5 1) a delivery vehicle having the ability to localize at the site of neoplastic tissue, and

10 2) a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a

15                   carrier, said peptide being connected to said delivery vehicle; and

- b)       an antineoplastic therapeutic agent.

27. A diagnostic kit, comprising:

- a)       a conjugate, said conjugate comprising:

5                   1)      a delivery vehicle having the ability to localize at the site of neoplastic tissue, and

10                  2)      a vasoactive peptide, said peptide comprising a fragment of interleukin-2, substantially free of cytokine activity, said vasoactive peptide being capable of enhancing vascular permeability when joined to a carrier, said peptide being connected to said delivery vehicle; and

- 15                  b)      a tumor imaging agent.